	A	B	C	D	E	F	G
1	Title	Background	Justification for Space Flight & Experiment Description	Flight Requirements			
2				Orbit	Altitude	Inclination	Correlative Environment
3	Damage mechanisms for charge-coupled devices (CCDs) in the visible and CMOS hybrid detectors	Visible detector designs are undergoing continuous revision in materials, structure, and layout. On-going validation and risk reduction techniques must be used to maintain or improve a space deployment role. Types of devices, manufacturers and mission dose and flux levels are some of the parameters that must be evaluated.	Fundamental performance parameters must be addressable in experiments. These include: dark current, noise, quantum efficiency, coefficient of thermal expansion, hot pixels, dose rate and time dependent effects, and shielding approaches. Additional experiments could include accommodating various device types and accessories including on-chip filters and I/O	Any	400-4000 km (GTO)	0,30,90	Radiation (type, fluence, flux, TID, energy) & temperature.
4	Dosimetry intercomparison and miniaturization	Several dosimeters that cover the area from mrad to Mrad are in use and in development. The lack of an intercomparison of their performances in space limits the correlation of microelectronics performance in its space environment with accommodation and mitigation techniques for the effects on microelectronics in general. It also limits the usefulness for assessing human radiation exposure.	Perform a space experiment to intercompare the dosimetry data. All dosimeters should be miniaturized, low power, and available after flight through industrial partners. Experiment components include telemetry and temperature measurements.	GTO or polar			Radiation and LET Spectra
5	Radiation hardness of high-gain silicon active pixel devices (APDs)	Remote atmospheric sensing from space using active sensors based on diode-pump solid-state lasers requires high-gain detectors to sense the weak back-scattered signal from an aerosol. High-gain Si-APDs are capable of performing this function, but they must be both radiation-hard and exhibit gains in multiple 100's. Achieving this greatly enhances system	Perform a space experiment to testing high gain Si APDs. Experiment must include both direct and in-direct viewing of the signal to establish relative radiation-hardness for these two configurations. The APDs' parameters that simulate use in lidar instruments are required. Attenuation and spectral selectivity of the signal seen, bias voltage, responsivity,	Circular	705 km	Sun-synchron-ous	
6	Performance characterization of focal plane arrays (FPA)	Radiation-hardened Focal Plane Array (FPA) technologies include p-channel CCD, active pixel, and hybrid CMOS arrays have been developed recently, but their performance in the space environment is required before they can be used reliably	Perform a space experiment to characterize the performance of these technologies so that risk for use in missions is reduced.	High radiation exposure			Incident Radiation
7	MEMS devices for corrective focusing of adaptive optics	Low power, low mass MEMS piezoelectric drivers have potential applications for corrective focusing of low-mass, large-surface membrane mirrors. However, before they can be used reliably in missions, their performance needs to be validated in space, and the performance data needs to be used to develop correction factors for optical distortion using feed-back approaches.	Perform a space experiment to characterize the performance of MEMS devices for corrective focusing of large-surface area mirrors. Use the data to develop correction factors for the devices and to improve the technology.	Any	Any	Any	